COMPLIMENTS OF THE AUTHOR

Control of Blight Diseases *of the* Potato

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Showing effect in yield of spraying every two weeks, over not sprayed and spraying three times. (Courtesy, N. Y. State Exp. Sta., Geneva).

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Control of Blight Diseases *of the* Potato

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A few potato diseases such as early blight, and late blight attack the vines and can be controlled by spraying. The latter disease also causes a potato tuber rot.

Early Blight

This is a fungous disease that attacks only the leaves, producing brown spots which as they enlarge form concentric rings. The spots sometimes unite in advanced stages of the disease causing the leaves to be dry and brittle. Because of the early death of the

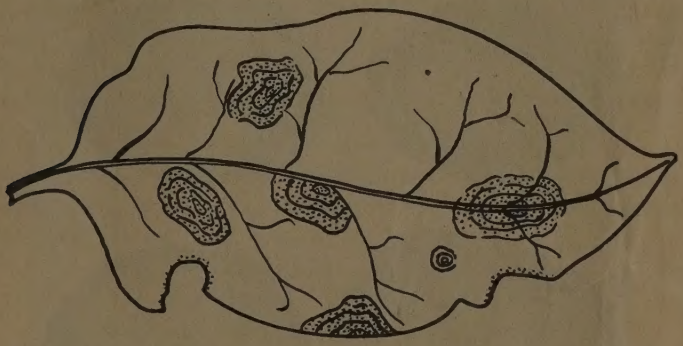


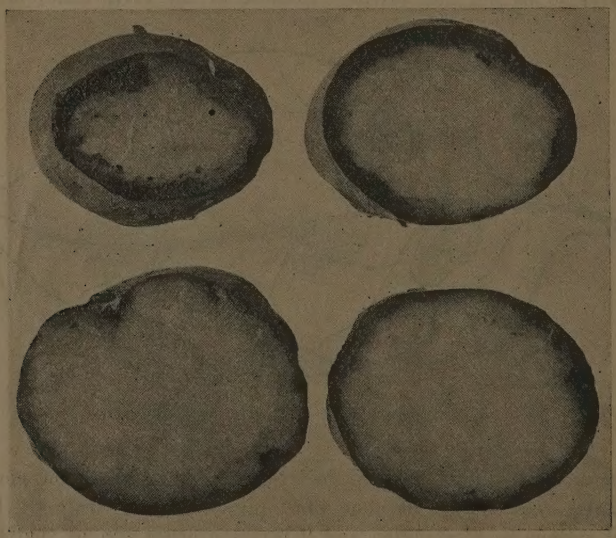
Diagram showing rings of early blight.

plants the potatoes are unusually smaller than those on normal plants. The disease develops most rapidly in hot weather. It is not serious in Washington and if occasion arises can be controlled by spraying with Bordeaux mixture.

Late Blight

This is a fungous disease that attacks and kills the vines and also causes a serious potato tuber rot. It reduced the yield of potatoes in Ireland in 1845 so it caused the Irish famine. In Washington it is only found in the coast region west of the Cascade mountains.

The disease first appears as brown spots on the edge or tips of the leaves, which if the weather is cool and moist, increase in size very rapidly and shortly may infect and kill the entire vine. The fungus spores or seed form as a white moldy growth on the dead areas and by means of these seed spores the fungus spreads to other plants. Infections usually start from a few diseased vines which, within a few days, under favorable conditions may spread over an entire field and kill all the vines, which give off an offensive odor. The seed spores that are washed off the leaves into the soil are the source of infection for potato tuber rot. In a short time infected potatoes develop a shallow browning about one-eighth inch under



Tuber rot caused by late blight.

the skin which, under favorable conditions, develop into a wet rot in the field. Potato tubers may also become infected at digging time by coming in contact with seed spores or diseased vines. The rot will develop in storage especially if it is hot and the ventilation is poor. According to experiments at the Oregon Experiment Station infections of the tubers can be avoided by delaying the digging of the potatoes for two weeks, in the fall.

Control: Spraying with Bordeaux mixture is the most practical way known to control late blight. Even if the disease is not present experiments have shown that sprayed crops have been increased as much as **105 bushel per acre** in New York. Diseased potatoes must never be used for seed since they frequently fail to grow or else produce weak plants which are a source of infection for the entire field. An application of Bordeaux just before digging will help to control potato tuber rot in storage.

Tip Burn

This disease is a drying or burning of the leaves beginning at the tips and edges and working inward. The leaves become brown, dry and brittle, often curling. This condition is most frequent on light soils during hot weather. Recent experiments indicate that in some cases an insect called the leaf hopper produces injury to potato leaves that is similar to tip burn and is called "hopper burn".

Spraying

Bordeaux mixture has proved to be the best spray to control early blight, late blight and tip burn. The best results are secured by using the following formula:

Bluestone (Copper Sulphate)	5 pounds
Lump Lime (fresh)	5 pounds
Water	50 gallons

This is known as the 5-5-50 formula.

How to Mix Bordeaux: In making this mixture three barrels or vats of convenient size are required. In one barrel thoroughly slack 5 pounds of lime in a small amount of water; then add enough water to make 25 gallons. In the other barrel put 25 gallons of water; then suspend the 5 pounds of bluestone near the top in

a burlap sack. After the bluestone is dissolved mix as follows: Pour equal quantities of the milk of lime and bluestone solutions **into the third barrel or directly into the spray tank at the same time.** This makes Bordeaux mixture which is of a milky blue color. It is advisable to strain the solutions as they are poured into the third barrel or spray tank. Bordeaux mixture deteriorates if it stands very long before using, however, if the solution cannot be used at once it can be preserved by adding three-quarters of an ounce (a heaping teaspoonful) of sugar dissolved in a small amount of water for each 50 gallons of spray mixture. The mixture will then keep for two or three months.

The proper method of mixing Bordeaux

In order to get good results the spraying must be done thoroughly and at least 100 pounds pressure must be maintained in the sprayer. The first application should be made when the plants are six to eight inches high. It will require about 75 gallons of mixture per acre to thoroughly spray these small plants. Later it will require 100 gallons per acre for the larger plants. The number of applications necessary will depend on the weather and location as to the severity of fogs. Usually from three to five sprayings from ten days to two weeks apart will be necessary. The new leaf growth must be kept constantly covered with the spray.

Dusting

Recently the application of fungicides as finely powdered dust has been used successfully in the Eastern part of America. The Sanders' Copper-Lime Dust, consisting of:

15 pounds dehydrated, finely powdered copper sulphate (bluestone)
8 pounds Calcium Arsenate
17 pounds hydrated lime

has been used successfully. If no insects are to be controlled 8 pounds of hydrated lime is substituted for the calcium arsenate. It requires about 50 pounds of this dust per acre to equal 100 gallons of 5-5-50 Bordeaux Mixture.

Dusting is more convenient than spraying but it costs more per acre, it requires less expensive equipment and less man hours. It has not been thoroughly tried in Washington.

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